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ICA500-1
Rev. B
03/05/09

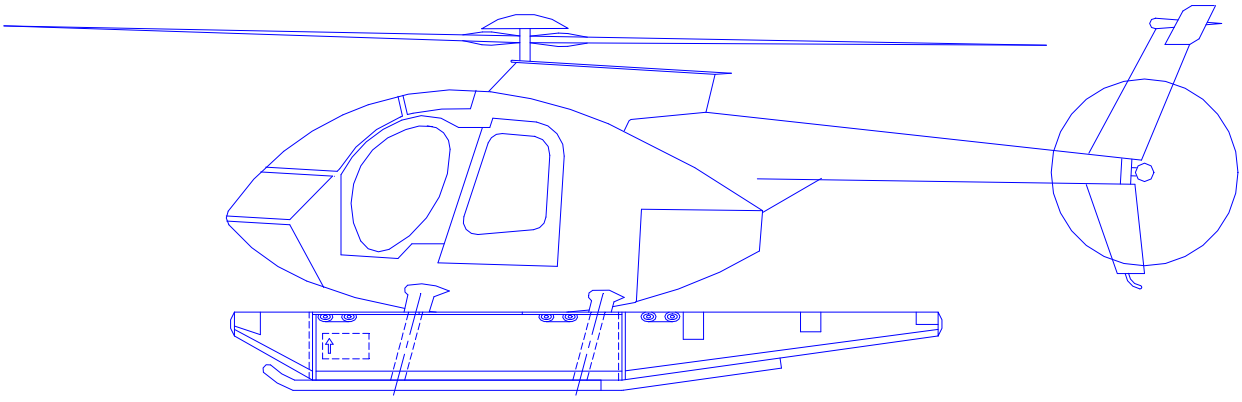
INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

FOR

UTILITY HELICOPTER FLOAT ASSEMBLIES

MCDONNELL DOUGLAS HELICOPTER SERVICE (MDHS)

MODELS 369HS, 369HM, 369HE FLOAT ASSEMBLY, LH - P/N 20408-101
MODELS 369HS, 369HM, 369HE FLOAT ASSEMBLY, RH - P/N 20408-102
MODELS 369D, 369E FLOAT ASSEMBLY, LH – P/N 20408-103
MODELS 369D, 369E FLOAT ASSEMBLY, RH – P/N 20408-104



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DETAILS OF REVISIONS

REV.	DATE	PAGE	DESCRIPTION	APPROVED
N/C	98Jan12	All	Initial Release	Committee
A	98Mar02	1	Deleted Model 500N	
		2	Page Intentionally Left Blank	
		8	Deleted Model 500N from Figures A.6, A.7, A.8	
		9	Deleted Model 500N from 1.2 Purpose and 1.5 Applicability	
		10	Deleted Model 500N from 1.9 Distribution	
		11	Deleted Model 500N from 1.10 Description of the System and Installation	
		16	Deleted Model 500N from Figures A.6 and A.7	
		17	Deleted Model 500N from Figure A.8	
		32	Deleted Model 500N from Illustrated Parts Lists for P/N 20408-103 and 20408-104	
B	03/05/09	5	Revised List of Effective Pages	P. Bravo
		7	Revised List of Figures and List of Tables	
		12	Added note Section 5.1.1, Added Section 5.1.2	
		13	Revised Section 5.1.4	

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RECORD OF SERVICE BULLETINS (S/B'S)

S/B NO.	DATE	DESCRIPTION

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LIST OF EFFECTIVE PAGES

Title		Page	Revision No.
Cover		1	B
Page Intentionally Left Blank		2	B
Details of Revisions		3	B
Record of Service Bulletins		4	B
List of Effective Pages		5	B
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1.0 INTRODUCTION

1.1 Scope

This manual provides description, operation, disassembly, assembly, repair and testing instructions and an Illustrated Parts List for the 20408 Series Utility Helicopter Floats. The equipment is manufactured by Apical Industries, Incorporated, Oceanside, California.

1.2 Purpose

The purpose of this manual is to maintain the MDHS 369HS, 369HM, 369HE, 369D, and 369E Utility Helicopter Float System in peak operating efficiency with the greatest service life.

1.3 Revision Control Procedure

All revisions to this document shall be controlled by the Apical Engineering Change Notice procedure. Each revision will be indicated with a vertical change bar. Each revised page shall display the next revision letter and all pages will be summarized on page 6, “List of Effective Pages.”

The final sign off shall be by the Fort Worth AEG Office on page 2, “Log of Accepted Revisions.”

1.4 Service Difficulty Reporting

Service Difficulty Reporting shall utilize the form included as Attachment 1.

1.5 Applicability

This manual shall be used to maintain the utility floats for the MDHS 369HS, 369HM, 369HE, 369D and 369E.

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1.6 Abbreviations

psi = pounds per square inch
psig = pounds per square inch gauge
º F = degrees Fahrenheit
º C = degrees Celsius
Hg = mercury
PRV = pressure relief valve
P/N = part number
F/N = find number
LH = left hand
RH = right hand

1.7 Precautions

The following precaution definitions will be used to indicate the seriousness of the hazard or condition.

WARNING: May be a maintenance procedure, practice, condition, etc., which could result in personal injury or loss of life.

CAUTION: May be a maintenance procedure, practice, condition, etc., which could result in damage or destruction of equipment

NOTE: May be a maintenance procedure, practice, condition, etc., or a statement which needs to be highlighted.

1.8 Units of Measure

psi = pounds per square inch
psig = pounds per square inch gauge
º F = degrees Fahrenheit
º C = degrees Celsius

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1.9 Distribution

This manual will be distributed with each MDHS 369HS, 369HM, 369HE, 369D and 369E Utility Float System purchased. It will also be available to float end users (or their mechanics or maintenance departments), Repair Stations and other companies by request only. A log of all recipients of this manual shall be maintained by Apical. Any changes to this manual shall be distributed to all recipients.

1.10 Description of the System and Installation

This equipment has been constructed to incorporate an aerodynamic design shape for installation on MDHS 369HS, 369HM, 369HE, 369D and 369E helicopters by means of a reinforced fabric attachment girt, making the aircraft completely amphibious and increasing its operational capabilities.

The utility flotation assembly includes the following:

- Two uninterchangeable floats. Each float consists of six separate air-holding chambers. The chambers are separated by bulkheads made of the same urethane coated nylon as the tube to minimize the loss of buoyancy in the event of puncture or tear. Each chamber contains a topping valve for manual inflation and a pressure relief valve (PRV) to prevent over-pressurization.

- The material color is white which provides radiant heat reflection or an optional fabric color is black. The float design provides for permanent inflation and full time buoyancy for helicopters assigned to off-shore or other over water activities. Abrasion-resistant chafing material located on the underside of each float and the reinforcement of the personnel walkways are incorporated to provide additional abrasion protection.

TABLE I. FLOAT CHARACTERISTICS

Material	Urethane coated nylon
Ship set inflated volume	87.4 cubic feet
Ship set inflated buoyancy	5452 pounds
Operating pressure	2.00 psi
Type of inflation	Compressed air
Total ship set weight	40.0 pounds (approximately)

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SECTION 4.0 AIRWORTHINESS LIMITATIONS

No airworthiness limitations are associated with this STC.

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SECTION 5.0 INSPECTION REQUIREMENTS AND OVERHAUL SCHEDULE

5.1 Inspection Requirements

WARNING

Prior to working on or around the helicopter, Safety Pins must be installed in both of the Valve Assemblies.

5.1.1 Preflight Inspection

NOTE

The calendar inspection and overhaul intervals, such as the 18 month and 3 year inspections, are from the date of installation

Conduct a walk around the LH and RH float assemblies and inspect for damaged areas. Any chafing, break or hole in the coated fabric is suspect and should be investigated. If damaged, refer to float field repairs in Section 25.1.

CAUTION

For the utility float exterior surface, care must be taken when using the degreaser from LPS Laboratories, “LPS Instant Super Cleaner/Degreaser”, or any similar solvent to clean the helicopter rotors or airframe exterior.

The float exterior surface should be covered with a tarpaulin prior to “LPS” exposure or flushed off with water if the float exterior surfaces has been exposed to “LPS”.

5.1.2 Semi-Annual Inspection

a. Complete all preflight inspection requirements.

b. Inspect the cylinders and valves for surface damage or corrosion.

c. Inspect all pull cables and external mounting hardware for any excessive corrosion, kinking, binding, or excessive friction.

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5.1.3 Every 18 Month Inspection

a. Inspect the girt for condition, function and security. If the girt is damaged in any way, see Table III.

b. Conduct the 18 month float leak test in accordance with Section 25.1.5 and inspect for chafing or damaged areas.

5.1.4 3 Years Inspection

a. Place aircraft on blocks. Bottom of skids should be at least 4 inches above the ground. Stand clear of all float assemblies. Initiate the float inflation.

b. After inflation, measure the pressure in each Float chamber. Pressure shall be a minimum of 1.75 psi at 70º F after 10 minutes. Then measure the pressure in each Liferaft chamber. Pressure shall be a minimum of 1.75 psi at 70º F after 10 minutes.

c. Conduct a float leak test in accordance with Section 25.1.5 and inspect for chafing or damaged areas.

d. Inspect covers for any cuts or tears in accordance with Section 25.1.3.

5.2 Component Overhaul Schedule

Component P/N	Component Nomenclature	Time Between Overhaul	Section
20408-101	Float LH	3 years	25.1
20408-102	Float RH	3 years	25.1
20408-103	Float LH	3 years	25.1
20408-104	Float RH	3 years	25.1

Note (1) The TBO of 3 years is from the date of installation or 5 years from the last hydrostatic test. The DOT Cylinder Hydrotest requirement is 5 years from the date of manufacture or the last test.

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SECTION 9.0 TOWING

Ground towing must be accomplished utilizing a dolly.

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SECTION 11.0 PLACARDS

11.1 Placard Information

Placards #1, #2 and #3 - see below.

11.2 Location

Mount Placard on instrument panel in plain view of pilot.

11.3 Application

Placards contain an air curing pressure sensitive adhesive. Pry off to remove. To install, remove paper backing, and apply pressure. Allow to remain undisturbed for 24 hours.

Placard #1: Night flight over water beyond autorotation capability to ground prohibited.

Figure A.1 Placard #1

Note: Placard #1 is not required if night landing lighting kit P/N 369D292032 is installed.

Placard #2: Minimum float pressure is 2.0 psig.

Figure A.2 Placard #2

Placard #3:

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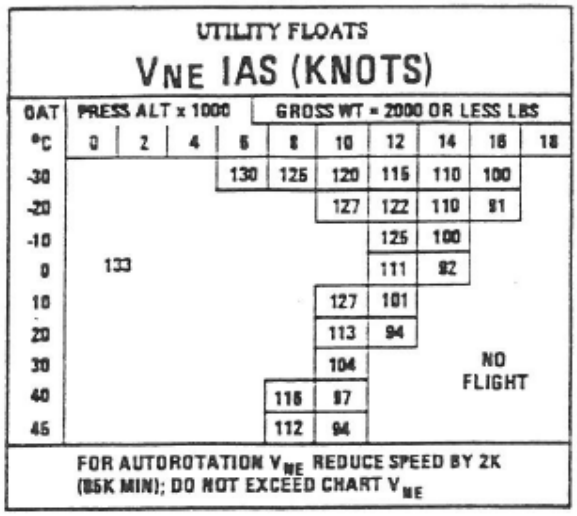


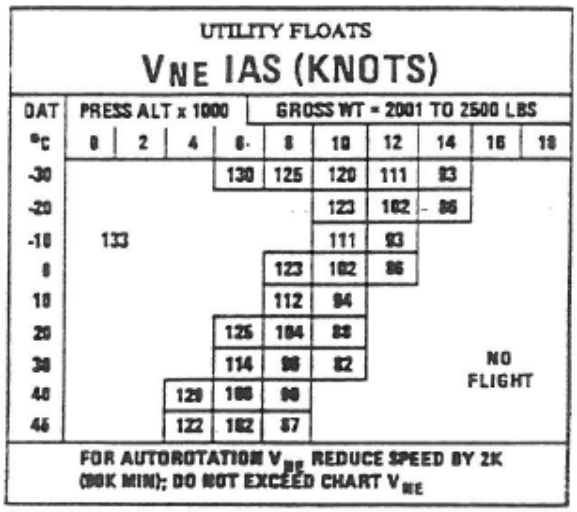
UTILITY FLOATS

VNE IAS (KNOTS)

OAT	PRESS ALT x 1000			GROSS WT = 2000 OR LESS LBS						
°C	0	2	4	6	8	10	12	14	16	18
-30				130	125	120	115	110	100	
-20						127	122	110	91	
-10							125	100		
0	133						111	92		
10						127	101			
20						113	94			
30						104		NO FLIGHT		
40					116	97				
45					112	94				

FOR AUTOROTATION V_{NE} REDUCE SPEED BY 2K (85K MIN); DO NOT EXCEED CHART V_{NE}

Placard #3-A for 369D
Figure A.3



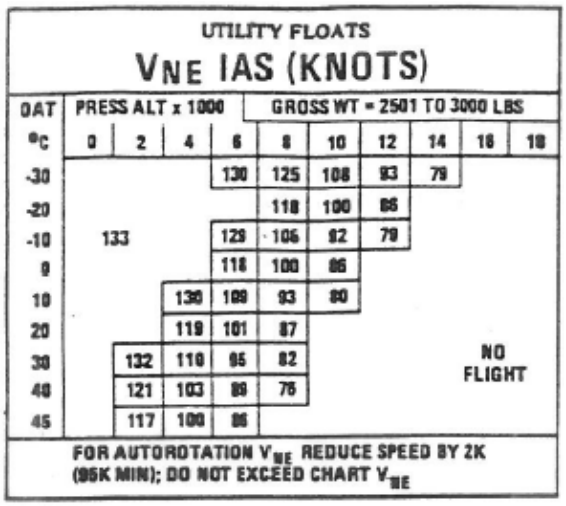
UTILITY FLOATS

VNE IAS (KNOTS)

OAT	PRESS ALT x 1000			GROSS WT = 2001 TO 2500 LBS						
°C	0	2	4	6	8	10	12	14	16	18
-30				130	125	120	111	93		
-20						123	102	86		
-10	133					111	93			
0					123	102	86			
10					112	94				
20				125	104	88				
30				114	96	82		NO FLIGHT		
40			129	108	90					
45			122	102	87					

FOR AUTOROTATION V_{NE} REDUCE SPEED BY 2K (90K MIN); DO NOT EXCEED CHART V_{NE}

Placard #3-B for 369D
Figure A.4



UTILITY FLOATS

VNE IAS (KNOTS)

OAT	PRESS ALT x 1000				GROSS WT = 2501 TO 3000 LBS					
°C	0	2	4	6	8	10	12	14	16	18
-30				130	125	108	93	79		
-20					118	100	86			
-10	133			129	106	92	79			
0				118	100	86				
10			130	109	93	80				
20			119	101	87					
30		132	110	95	82			NO FLIGHT		
40		121	103	89	76					
45		117	100	86						

FOR AUTOROTATION V_{NE} REDUCE SPEED BY 2K (95K MIN); DO NOT EXCEED CHART V_{NE}

Placard #3-C for 369D
Figure A.5

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UTILITY FLOATS
VNE IAS (KNOTS)

OAT	PRESS ALT x 1000				GROSS WT = 2000 OR LESS LBS					
deg. C	0	2	4	6	8	10	12	14	16	18
-30				127	122	118	113	109	100	
-20					129	124	119	109	91	
-10							122	100		
0							110	92		
10			130			124	101			
20						112	94			
30						103				
40					115	96	NO FLIGHT			
45					110	93				

FOR AUTOROTATION VNE REDUCE SPEED BY 2K
(85K MIN); DO NOT EXCEED CHART VNE

Placard #3-A for 369E
Figure A.6

UTILITY FLOATS
VNE IAS (KNOTS)

OAT	PRESS ALT x 1000				GROSS WT = 2001 TO 2500 LBS					
deg. C	0	2	4	6	8	10	12	14	16	18
-30				127	122	118	110	94		
-20						121	102	86		
-10						110	94			
0		130			121	102	87			
10					111	94				
20				123	103	88	NO FLIGHT			
30				112	96	83				
40			125	105	90					
45			120	102	87					

FOR AUTOROTATION VNE REDUCE SPEED BY 2K
(90K MIN); DO NOT EXCEED CHART VNE

Placard #3-B for 369E
Figure A.7

UTILITY FLOATS
VNE IAS (KNOTS)

OAT	PRESS ALT x 1000				GROSS WT = 2501 TO 3000 LBS					
deg. C	0	2	4	6	8	10	12	14	16	18
-30				127	122	107	93	79		
-20					116	100	86			
-10				126	107	93	79			
0		130		116	100	87				
10			126	108	94	80				
20			117	101	87					
30		128	109	94	82	NO FLIGHT				
40		118	102	89	76					
45		115	99	87						

FOR AUTOROTATION VNE REDUCE SPEED BY 2K
(95K MIN); DO NOT EXCEED CHART VNE

Placard #3-C for 369E
Figure A.8

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SECTION 25.0 FLOAT REMOVAL, CLEANING, TESTING, FIELD REPAIRS AND REINSTALLING

25.1 Floats

Note

Annual leak test may be accomplished with floats mounted on skid tube.

25.1.1 Float Removal from Aircraft

Deflation of float for removal from aircraft shall be accomplished prior to attempting the removal of the float from aircraft struts. Test adapter P/N A-51219N may be inserted into the topping valve to deflate or valve poppet may be depressed manually to allow air to escape. After floats are deflated the floats may be removed from the aircraft by removing bolts, washers and gravel guards as listed in Figure C.

25.1.2 Table II

TABLE II. CONSUMABLE CLEANING MATERIALS REQUIRED

Description	Availability
Cleaning Solvent - Methyl Ethyl Ketone (MEK)	Commercially available
Stiff bristle brush	Commercially available
Soft bristle brush	Commercially available
Detergent	Commercially available

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25.1.3 Table III

TABLE III. VISUAL CHECK OF ASSEMBLIES AND COMPONENTS

Component	Check Procedure	Disposition
Fabric/Seams	Cuts, tears, punctures, abrasions (mark with chalk if discrepant).	See Repair (Section 25.1.6). If beyond limits, return to factory.
Pressure Relief Valve (PRV)	Leaks, opening and closing pressure only - see Testing (Section 25.1.5).	If valve leaks, replace it (Section 25.1.6.4). Flange leaks, return to factory.
Topping Valve	Leaks only - see Testing (Section 25.1.5).	If valve leaks, replace it (Section 25.1.6.4). Flange leaks, return to factory.
Girt Assembly	Condition, function and security	Return to factory for repair.

CAUTION

The working area for inspection should be covered with a clean tarpaulin, carpeting or equivalent protection, free of hardware, tools and other sharp objects.

25.1.4 Cleaning

a. Use good shop safety precautions and practices at all times when using solvents.

WARNING

USE FLAMMABLE SOLVENTS ONLY IN WELL VENTILATED AREAS. DO NOT INHALE FUMES.

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Note

Do not apply cleaning solvent to float decals or stencil markings.

b. Cleaning Float Assembly - If Necessary

1. Clean float assembly fabric surfaces using detergent soap and water solution or cleaning solvent. (Detergent soap and water solution is the preferred method.) See Table II. Cleaning Materials Required.

2. Apply cleaning solvent (see Table II) with a clean, soft cloth or a soft bristle brush for areas of oil, dust or dirt. Immediately remove excess solvent with clean soft cloth and dry using compressed air (shop air). The compressed air source should be oil and moisture free and should be equipped with a 20 micron filter for best results.

25.1.5 Testing

Perform a float pressure test annually and also following the overhaul of float assemblies before returning the equipment to service. The relief valve and topping valve tests shall be performed in conjunction with trouble shooting information (Table VI), during the annual inspection and as part of the float pressure test if replacement or repair of those components was accomplished during overhaul.

a. Float Pressure Test (See Table IV)

1. Inflate all chambers of the assembly using shop air to 2.0 psig. (Inflate in 0.5 psig increments.) Measure pressure in each compartment with mercury manometer or pressure gauge (calibrated in increments not greater than 0.1 psi) connected to topping valve.

2. Allow the inflated float to stand for one hour after initial inflation. Then check and readjust pressure in each compartment, if necessary, to 2.0 psi. Record temperature and barometric pressure.

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3. Allow the float to remain undisturbed for 24 hours. The maximum allowable pressure drop is 0.50 psig after correction for temperature and barometric variations.

4. Record the compartment pressures, the temperature and barometric reading at the end of the pressure test. Correct for temperature variations by subtracting 0.1 psig for every 3° F rise in temperature, or adding 0.1 psig for every 3° F drop.

5. Correct for barometric conditions by adding 0.1 psig to the final gauge reading for every 0.2 inches of mercury that the barometric pressure had increased, or subtract 0.1 psig from final reading for every 0.2 inches of mercury that the barometer has fallen.

6. If the corrected pressure falls below specified limits, inflate the float to 2.0 psig and check for leaks by swabbing the tubes with leak solution, using a soft brush. (Table II.)

b. Topping Valve Leakage Test

This valve may be checked as part of the float pressure test while it is inflated to 2.0 psig.

1. Apply leak solution (Table IV) with brush at mounting patch to float attachment location. If bubbles indicate a leak, the float assembly must be returned to the factory for replacement of the valve flange/base.

2. If leakage is due to valve not seating properly, check threads in base, on float valve. If damaged base, return to factory. If damaged valve threads, remove and replace. (See Figure B. Valve Removal and Replacement.)

c. Pressure Relief Valve Test

This valve may be checked following conclusion of the Float Pressure Test.

1. Apply leak solution (Table IV) with brush at mounting patch to float attachment location. If bubbles indicate a leak, the float assembly must be returned to the factory for replacement of the valve flange/base.

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2. Fill the relief valve aperture with clean water. Slowly raise the compartment pressure and watch for bubbles indicating that the valve opens. Then reduce pressure watching for a cessation of bubbles.

3. The valve should open at 4.0 psig ± 0.25 psig and should close by 3.0 psig.

4. If valve operates improperly, apply leak solution (Table IV) in aperture of valve. If bubbles indicate a leak at this location, remove valve from base flange and check threads in flange base and on valve. If threads in flange are damaged, return float to factory for repair/replacement. If valve threads are damaged, replace as specified. (See Figure B.)

TABLE IV. TESTING EQUIPMENT/MATERIALS REQUIRED

Equipment	Description/Function	Supplier
Manometer	Scale increments not more than 0.10 psi. Range: 0 - 120 in. Hg.	Note 3 Optional
Pressure Gauge	Increments not greater than 0.1 psi	Note 3 Optional
Barometer	Scale increments not more than 0.10 in. Hg.	Note 3 Optional
Stopwatch	Plain timer, 0.10 second graduations	Note 3 Optional
Thermometer	Scale increments not more than 1° F	Note 3 Optional
Leak Test Solution	Leak test Detergent soap and water solution	Optional

Note: Test set up information:

1) Testing of components is accomplished on the float assembly with all components assembled as an operational system. Special fixtures and test benches are not required.

2) Attachment of inflation shop air source or manometer testing equipment to the float assembly is accomplished using the topping valves and adapters.

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3) Supplier(s) - "Optional" Equipment required shall be the type of equipment that can be calibrated for assurance of accuracy.

25.1.6 Field Repairs - Fabric And Seam Repairs

The following repairs will be confined to the patching of punctures, tears, and holes not greater than 3 inches in diameter or 2 inches by 10 inches in length. Replacement of complete section or bulkheads shall not be attempted in the field since operating integrity and/or air retaining capabilities of the float shall be affected. All major repairs shall be accomplished at a certified repair depot or factory facilities. Repair kit items are as follows:

TABLE V. HELICOPTER FLOAT REPAIR KIT ITEMS

Item	Quantity
5 inch diameter repair patches	4
4 x 12 inch rectangular patches	2
6 x 14 inch rectangular patches	2
8 ounce tube of adhesive with brush	1
Adhesive information sheet	1
Wrench B-51025	1
Topping up valve B-51209	1
PRV valve B-51019-4	1
Instruction sheet	1
Test adapter A-51219N	1

25.1.6.1 Cement Bonding

PROJECT	WASHING	ACTIVATING	ADHESIVE
Urethane Coated Fabric	MEK 100%	MEK 100%	LA 4123 or equivalent

a. All mixing containers, cans, stirrers and mixing equipment shall be clean and free of any dirt, contamination and dried adhesive.

b. Supplies

1) Cloth, lint-free undyed or white cotton, cut to about 8" square.

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2) Brush, utility, size suited to the bond area.

3) Solvent containers:

Safety storage can for solvent
Pump (plunger) can
Brush container with cover
Rag can with cover
Solvent waste can
Spent rag can

4) Hand tools:

Pusher, plastic or metal
Roller

To ensure a proper bond, use the chart below to determine the minimum size patch to be used, if applicable.

Size of tear	Minimum overlap on all sides of damaged area
up to 1/8 inch	1 inch
1/8 inch to 2 inches	2 inches
2 inches to 10 inches	inside patch - 1 inch outside patch - 2 inches

25.1.6.2 Holes, Cuts, Tears And Punctures Up To 3 Inches

a. Using a clean cloth, dry the surface to which the patch is to be applied.

b. If surface cannot be cleaned due to build up of chemicals, use sandpaper to abrade area to be bonded until achieving a dull appearance.

CAUTION

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c. Do not touch or handle the cemented areas because oils in the fingers can contaminate the adhesive. Check for dryness by touching with the back of the hand or knuckles only.

d. Adhesives have a limited pot life, which means that the adhesive will "go bad" after a specified length of time. Adhesives may not be used after their pot life has expired, as indicated on the container label. Dispose of expired cement appropriately.

e. The adhesive bond develops increasing strength over a period of days.

CAUTION

Cemented components should not be tested or inflated until the initial cure period specified below. Product should not be packed until the final cure period as specified below.

Adhesive Pot Life and Cure Times

Supplier	Grade	Pot Life	Initial Cure	Final Cure
Apical Industries	LA 4123	6 hours	12 hours	48 hours

f. The adhesive bonding process is effected by environmental conditions of temperature and humidity. Low temperatures will slow drying and cure times. Adhesive bonding cannot be performed at temperatures lower than 55° F.

High humidity may cause moisture to condense on the bond area, as indicated by a foggy white appearance on the cement or component. Before applying additional cement or before activation, flash (evaporate) the moisture by wiping lightly with additional solvent.

g. Clean the bond area as follows:

1) Fold a clean cloth in half, then in half again to form a square. Dampen

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the cloth with solvent. Squeeze the excess solvent from the cloth, back into the pump can screen.

2) Wash the bond area by wiping in one direction only to remove all visible contamination and release agents. Do not wipe back and forth as this only smears contaminants.

3) Refold the cloth as necessary to keep a clean wiping surface. Each cloth should give eight wiping surfaces. When the cloth is soiled, dispose of it and all chemicals properly.

h. Allow the cleaning solvent to evaporate completely before applying adhesive.

Note

When washing coated fabric, do not allow excess solvent to collect at the edges of seams. Do not apply solvent to decals or stencil markings (whenever possible) since they can be removed by the solvent.

i. Apply the first coat of adhesive to the bond area as follows:

1) Brush a uniform coat of adhesive onto the bond area, rubbing the adhesive firmly into the fabric or component.

2) Allow the first coat to air dry completely before proceeding. Check dryness with the back of your knuckle.

3) Close the adhesive container when not in active use.

j. Apply the second coat of adhesive to the bond area as follows:

1) Brush a second uniform coat of adhesive onto the bond area, painting the adhesive lightly over the first coat.

2) Allow the second coat to air dry completely before proceeding. Check dryness with the back of your knuckle.

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3) Close the adhesive container when not in active use.

k. Activate the adhesive by one of the following methods:

1) To solvent activate: Wipe both cemented surfaces lightly but thoroughly with a clean cloth dampened with solvent. Join the components per step (l) within 15 seconds of activating.

2) To heat activate: Direct the flow from a hot air gun over both cemented surfaces. Avoid applying too much heat which may melt the coating or component. When the adhesive feels tacky, immediately proceed to join the components per step (l).

l. Join the components as follows:

1) Once activated, immediately align the two mating surfaces and press together in a wallpapering fashion. Use a pusher or roller to expel any entrapped air.

2) Press with a pusher or roller over the entire activated area to ensure complete contact.

3) When a component is bonded over a seam, tape or other uneven base, press firmly at the edge of the step-off first to avoid bridging. Then bond the remainder of the component.

4) Apply the patch gradually from the center to the edges to minimize the possibility of air bubbles being trapped beneath the patch.

5) Using a smooth edge putty knife and starting at the center of the patch, apply pressure and move toward the edge of the patch, pushing out any air bubbles or wrinkles. Take special care when pushing the edge of the patch to prevent the edges from lifting.

6) When all wrinkles and air bubbles have been eliminated, uniformly roll the joined area using a hand roller.

m. After the patch has dried for approximately 2 hours, the repaired area may

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be inflated to a maximum of 1.0 psi. After the repair has dried for 24 hours, the product may be inflated to working pressure and tested in accordance with testing instructions in this manual.

n. Clean and inspect the bonded area as follows:

1) Clean any adhesive drops and excess adhesive outside the required bond area by wiping with a clean cloth dampened with solvent.

2) Inspect for location, overlap, lifts, wrinkles and air bubbles. Reactivate and join to repair these defects.

o. Allow the bonded components to cure undisturbed.

25.1.6.3 Holes, Cuts, Tears And Punctures Up To 2 x 10 Inches

Note: These instructions are for repairs to fabric tears that are limited to a 2 x 10 inch maximum tear (curved or straight).

CAUTION

Repair tears by patching both the inside and the outside surfaces of the fabric prior to inflating the float.

a. Trim off loose threads using scissors.

b. Sprinkle a handful of powdered soapstone or talc inside the float opposite the tear area to prevent joining the inside surfaces of the fabric together.

c. Using a clean cloth, dry all surfaces to which the patches will be applied.

d. Thoroughly clean the inside surface of the fabric around the tear and the underside of one of the patches using a cloth dampened with solvent.

e. Apply adhesive and activate surfaces as instructed in 25.1.6.2 i., j. and k. above.

f. Fold the patch in half lengthwise and pass the patch through the tear and install it cement side up on the inside surface of the float fabric directly

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under the tear.

g. Immediately apply pressure with a hand roller to bond the patch to the inside of the fabric. Pressure is important for a good bond.

h. If surface cannot be cleaned due to build up of chemicals, use sandpaper to abrade outside surface of area to be bonded until achieving a dull appearance.

i. Thoroughly clean the outside surface of the fabric around the tear and the underside of the other patch using a cloth dampened with solvent.

j. Apply adhesive and activate surfaces as instructed in 25.1.6.2 i., j. and k. above.

k. Apply the patch gradually from the center as instructed in 25.1.6.2 l., m., n. and o. above.

25.1.6.4 Valves (Repair And Replacement)

Pressure relief valves (PRV) and the topping valves used in the float assemblies shall be inspected for leaks, cleaned as required and if faulty should be replaced. Valves may be removed and reinstalled using a valve wrench B-51025. See Figure B for valve removal and replacement.

a. Using special tool (valve wrench B-51025) remove valve by inserting wrench into molded flange and turn counter-clockwise to remove valves. Insert wrench slot over molded tab of topping valve and turn counter-clockwise.

b. Check threads in recessed molded fitting bonded in the float and, if necessary, clean using a dry cloth or soft bristle brush. If discrepant, replace at factory.

c. Insert valve into threads of recessed molded fitting and turn clockwise by hand to ensure that threads are not crossed. Continue to turn by hand until valve is seated. Attach wrench, turn clockwise and torque to 30 - 40 inch pounds.

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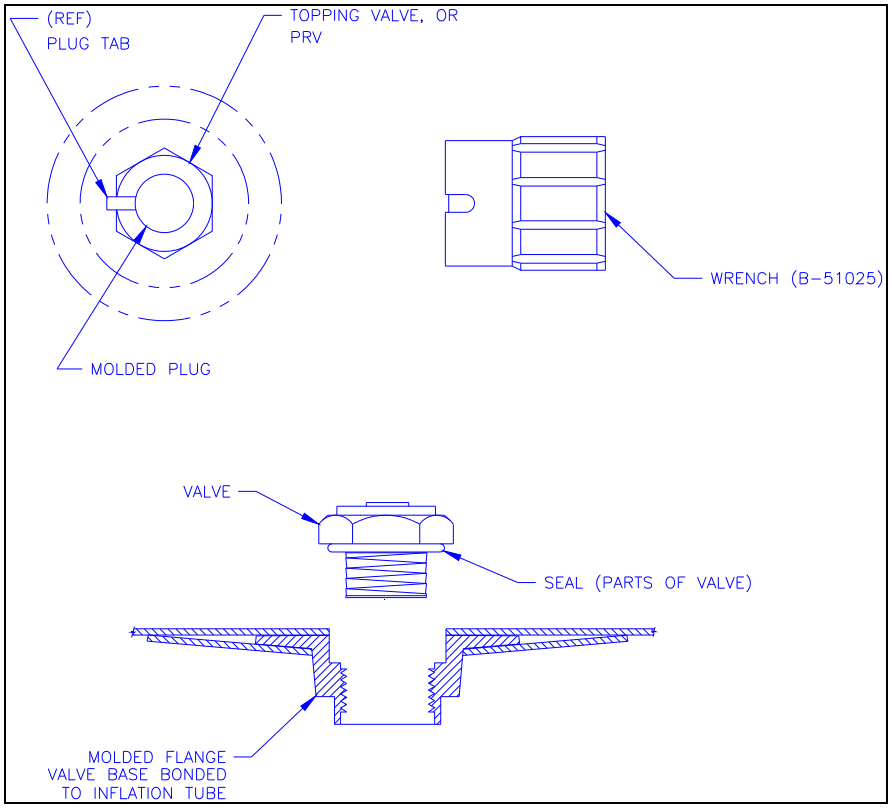

Figure B.
Valve Removal and Replacement - PRV and Topping Valve

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25.1.6.5 Table VI.

TABLE VI. TROUBLE SHOOTING
FLOAT WILL NOT MAINTAIN OPERATING PRESSURE

Probable Cause	Remedy
Hole in fabric	Patch hole. See 25.1.6.2.
Tear in fabric	Patch tear. See 25.1.6.3.
Leaking PRV **	Check threads. See 25.1.3.
Leaking topping valve **	Check threads. See 25.1.3.

** Denotes the following: if valve leaks at the mounting base, return float assembly to factory for repair/replacement.

25.1.6.6 Table VII.

TABLE VII. SPECIAL TOOLS

Apical Part Number	Nomenclature	Application
B-51025	Valve Wrench	Removal and installation of all float valves
A-51219N	Test Adapter	Accepts gauge to test float psi

25.1.6.7 Table VIII.

TABLE VIII. REPAIR MATERIALS REQUIRED

Material/Equipment	Specification and/or Vendor Designation
Float material	Identification: L2030UPW; Apical Industries, Inc.
Adhesive	LA 4123; Apical Industries, Inc.
Activating agent	Methyl Ethyl Ketone (MEK)
Brush, 1” wide	Commercial - solvent resistant
Spatula (pusher) or dull putty knife	2 1/4” x 4”; Apical Industries, Inc.
Cotton cloths	Commercial waste - clean and soft

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25.1.7 Reinstalling Floats

a. Reinstall float and install bolts (F/N 30), washers (F/N 31) and gravel guards (F/N 32, 33, 34). See Figure C.

b. Torque bolts (F/N 30) from the forward end of the float to the aft, using the specified torque value of 15-20 inch pounds.

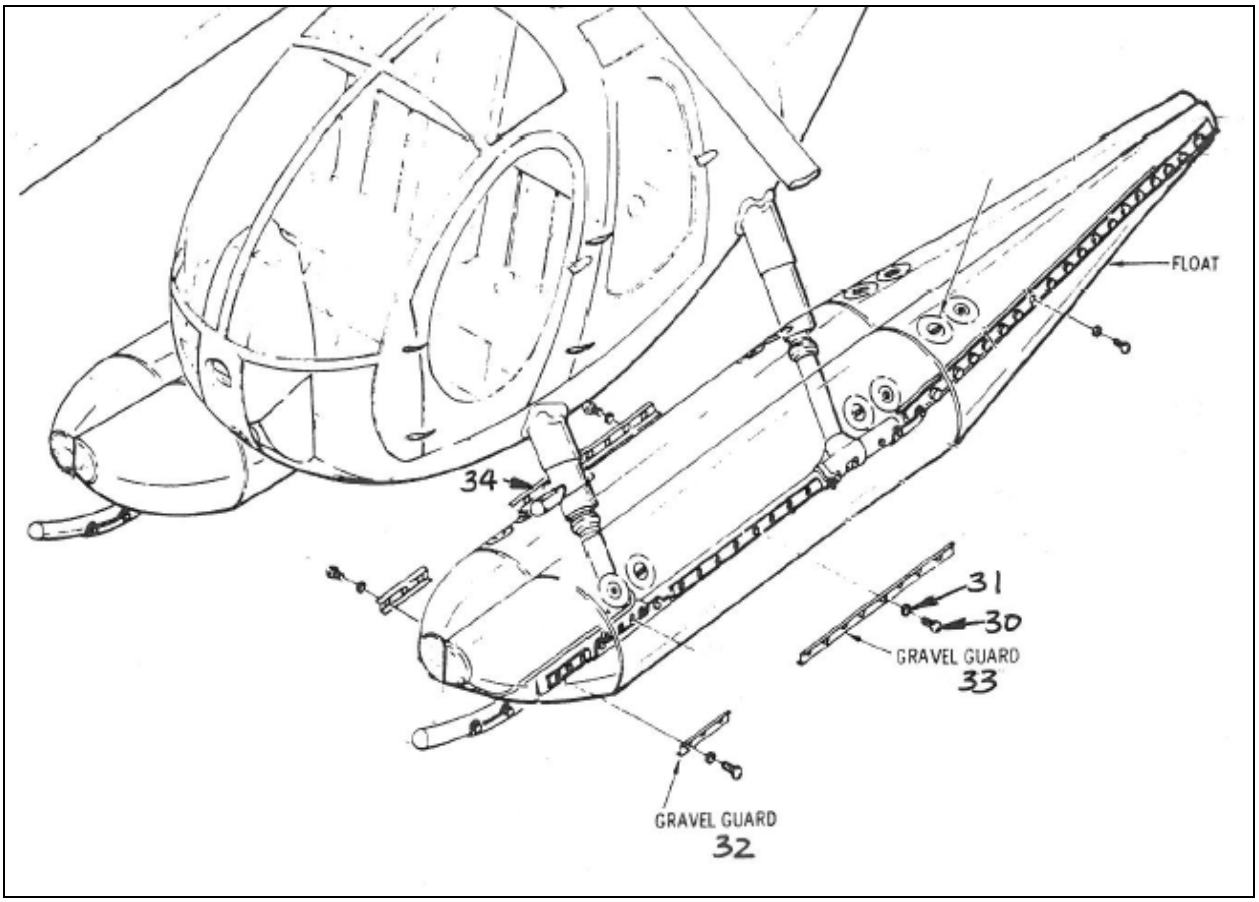

Figure C. Float Attaching Hardware

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25.1.8 Completion of Installation

a. Inspect utility float installation to ensure all components are secured.

b. Open fill valves and inflate the six float chambers with compressed air to 2.0 psig. Inflate chambers gradually to maintain equal volume in each chamber. Close fill valves.

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25.2 Illustrated Parts List

See the following figure (Figure D) for part locations.

F/N	Qty	Description	Part No.
		Float, LH - 369HS, 369HM, 369HE	20408-101
5	6	Topping Valve	B-51209
6	6	PRV	B-51019-4
30	56	Bolt	NAS1223C4
31	56	Washer	HS306-222
32	2	Gravel Guard	369H92043-3
33	1	Gravel Guard	369H92043-1
34	1	Gravel Guard	369H92043-2

F/N	Qty	Description	Part No.
		Float, RH - 369HS, 369HM, 369HE	20408-102
5	6	Topping Valve	B-51209
6	6	PRV	B-51019-4
30	56	Bolt	NAS1223C4
31	56	Washer	HS306-222
32	2	Gravel Guard	369H92043-3
33	1	Gravel Guard	369H92043-1
34	1	Gravel Guard	369H92043-2

F/N	Qty	Description	Part No.
		Float, LH - 369D, 369E	20408-103
5	6	Topping Valve	B-51209
6	6	PRV	B-51019-4
30	56	Bolt	NAS1223C4
31	56	Washer	HS306-222
32	2	Gravel Guard	369H92043-3
33	1	Gravel Guard	369H92043-1
34	1	Gravel Guard	369H92043-2

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F/N	Qty	Description	Part No.
		Float, RH - 369D, 369E	20408-104
5	6	Topping Valve	B-51209
6	6	PRV	B-51019-4
30	56	Bolt	NAS1223C4
31	56	Washer	HS306-222
32	2	Gravel Guard	369H92043-3
33	1	Gravel Guard	369H92043-1
34	1	Gravel Guard	369H92043-2

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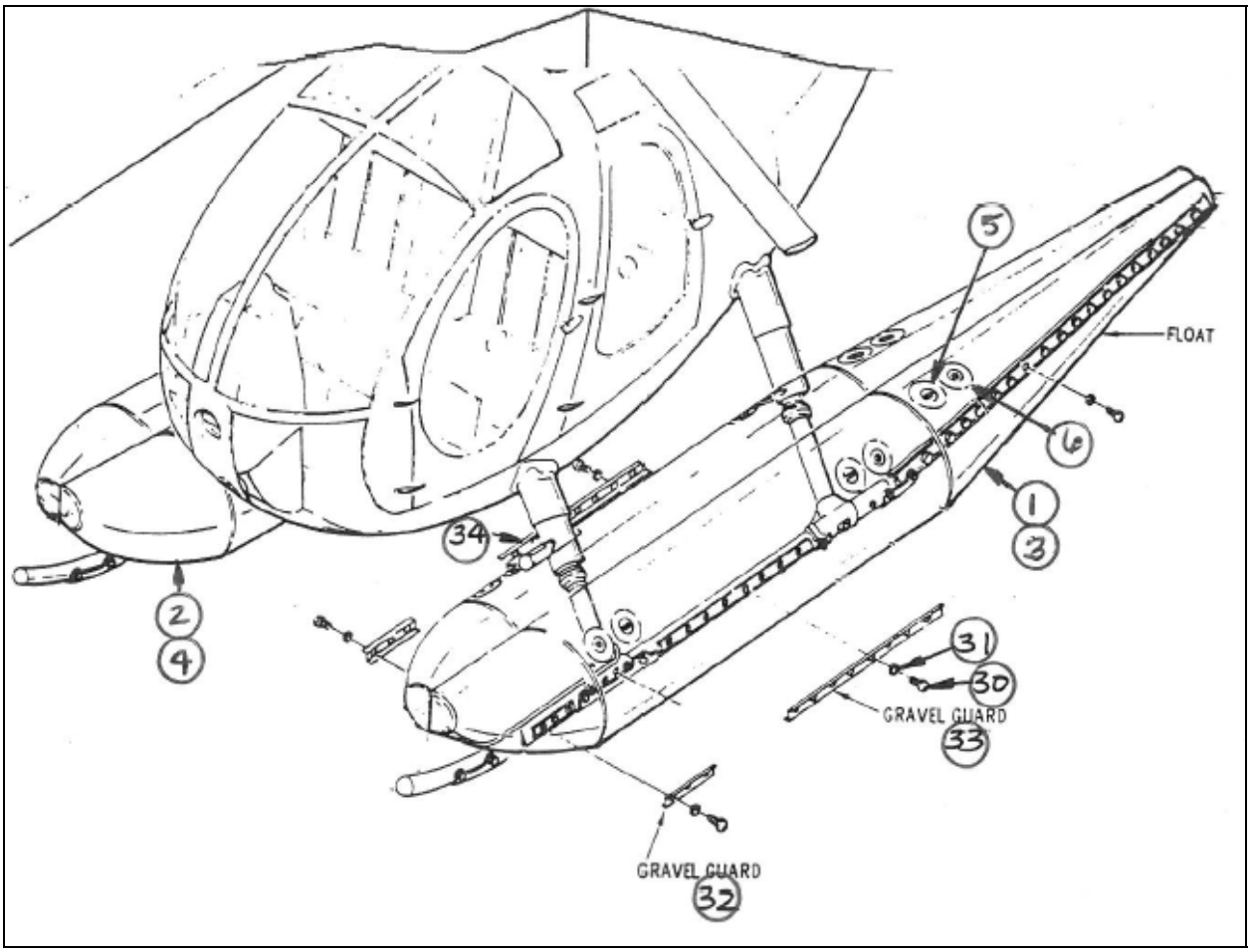

Figure D. Utility Float

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SEMI-ANNUAL INSPECTION WORKSHEET

HELICOPTER REGISTRATION NO. _____

Signature and Date
1.
2.
3.
4.
5.
6.

Remarks

Semi-Annual Inspection #:	1st	2nd	3rd	4th	5th	6th
1. Inspect floats for chafing, breaking or holes.						

ANNUAL INSPECTION WORKSHEET

HELICOPTER REGISTRATION NO. _____

Signature and Date
1.
2.
3.
4.
5.
6.

Remarks

Annual Inspection:	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
1. Inspect the girt for condition, function and security.						
2. Conduct annual float leak test. Inspect floats for chafing or damaged areas.						